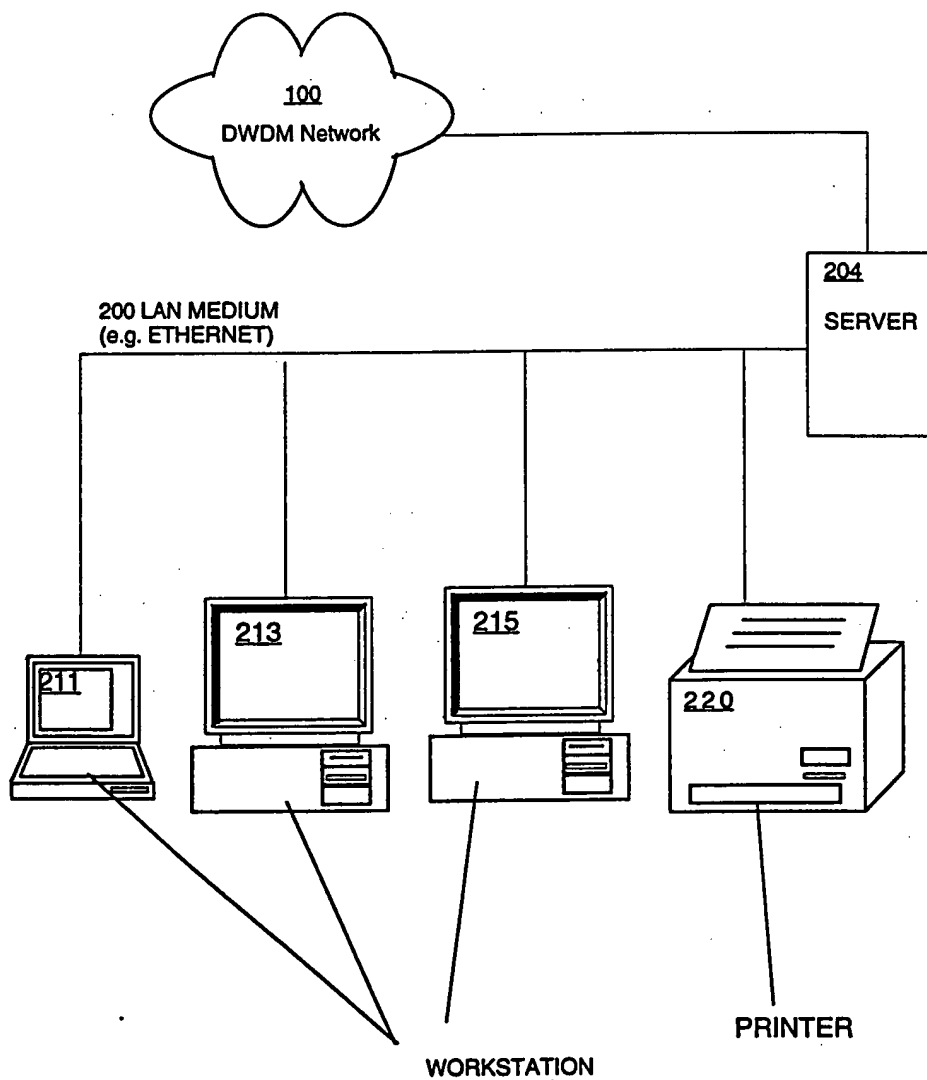


FIGURE 1



**FIGURE 2**

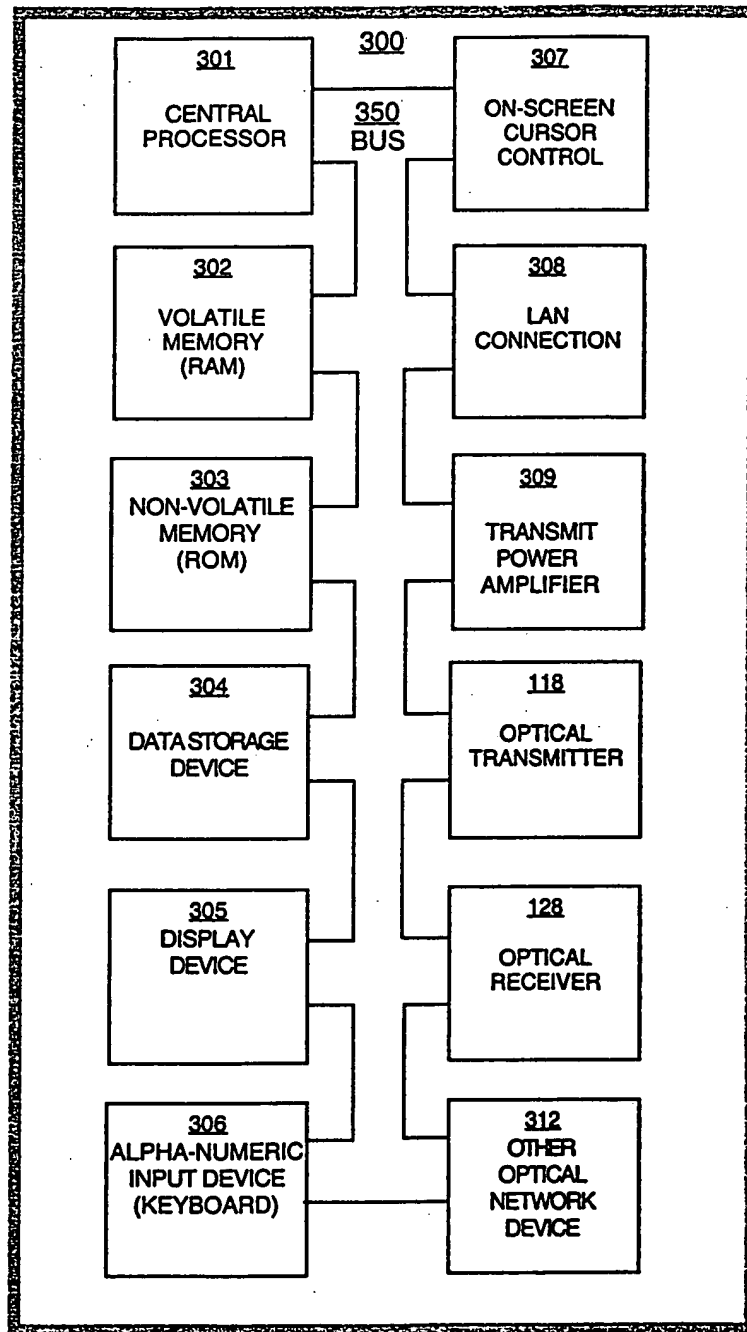


FIGURE 3

400 TABLE OF EXEMPLARY COMMANDS AND EXPLANATIONS

Net Audit (Version X)								Net Advisor
Command	Key Variable(s)	Section	Sub Section	MIB	Poll Freq	Net Info	Net Advice	Include
RTRV-CNFRN::001;	Network element Name	Configuration	System		Weekly	Retrieves the name of the network element		
RTRV-VER::CMP_W-01-01-15:002;	TL1 Agent Software Version	Configuration	System		Weekly	Retrieves the software version of the TL1 agent that is running on the network element. The software version, SCC version, BIOS version and serial number are returned.		
RTRV-IPADDR::CMP_W-01-01-15:003;	IP Address	Configuration	System		Weekly	Retrieves the IP address of the network element. Additionally returns the subnet mask and gateway addresses.		
RTRV-NETTYPE::004;	NE Type	Configuration	System		Weekly	Retrieves the network element vendor name, element model and element type. The supported element types are TERMINAL, OLA, QADM and LEM sites. Must be running version 1.3.0 or greater of the TL1 agent to use this command.		
RTRVEOPT::SOFTLINE2-ALL:004;	Board Name and board Position	Configuration	System		Weekly	Retrieves the presence and status of equipment and facilities for the network element.		
RTRV-VER::SOFTLINE2:ALL:005	Software Version of Each Card	Configuration	System		Weekly	Retrieves the software version running on each board. The software version, SCC version, Bios version and serial number are returned.		
RTRV-WRKP::PRE_L-01-01-04:005;	Working Point Values	Fault	System			Retrieves the working point of various points of measure for the PRE-L board. If no working point value is returned, it means that it is currently set to zero.		✓
RTRV-PM::SOFTLINE2:PRE_L-01-01-04:006--999-UP;	Current retrieved value	Fault	System		Daily	Retrieves the current value of various points of measure for the PRE_L board.		✓
RTRV-TH::PRE_L-01-01-04:007;	Threshold value	Fault	System		Daily	Retrieves threshold values of various points of measure for the PRE_L board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify input power, output power and laser current values and thresholds. If temperature is related, verify environmental conditions. Check for associated alarm status messages. Fault isolate to the board level	✓
RTRV-TH::8WD_B-01-01-07:001;	Temperature values	Fault	System		Daily	Retrieves threshold values of various points of measure for the 8WD board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify environmental conditions. Check for associated alarm status messages. Fault isolate to the board level.	✓
RTRV-WRKP::8WD_B-01-01-07:002;	Temperature working points	Fault	System		Daily	Retrieves the working point of various points of measure for the 8wd board. If no working point value is returned, it means that it is currently set to zero.		✓
RTRV-PM::8WD_B-01-01-07:003;	Temperature actual value	Fault	System		Daily	Retrieves the current value of various points of measure for the 8WD board.		✓
RTRV-TH::TPA_R-01-01-01:001;	Laser Power	Fault Performance	System		Daily	Retrieves threshold values of various points of measure for the TPA board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify input power, output power and laser current values and thresholds. If temperature is related, verify environmental conditions. Check for associated alarm status messages. Fault isolate to the board level	✓
RTRV-WRKP::TPA_R-01-01-01:002;	Laser Power	Fault Performance	System		Daily	Retrieves the working point of various points of measure for the TPA board. If no working point value is returned, it means that it is currently set to zero.		✓

FIGURE 4A

400 TABLE OF EXEMPLARY COMMANDS AND EXPLANATIONS (Cont.)

Net Audit (Version X)								Net Advisor
Command	Key Variable(s)	Section	Sub Section	MIB	Poll Freq	Net Info	Net Advice	Include
RTRV-PM:TPA_R-01-01-01:003::,-999-UP;	Laser current and output	Fault Performance	System		Daily	Retrieves the current value of various points of measure for the TPA board.		✓
RTRV-TH:WCM_EM_N05-01-03-05:001;	Laser input and output power	Fault Performance	System		Daily	Retrieves threshold values of various points of measure for the TPA board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify input power, output power and laser current values and thresholds. Check for associated alarm status messages. Fault isolate to the board level.	✓
RTRV-WRKP::WCM_EM_N05-01-03-05:002;	Laser temperature	Fault Performance	System		Daily	Retrieves the working point of various points of measure for the WCM board. If no working point value is returned, it means that it is currently set to zero.		✓
RTRV-PM:WCM_EM_N05-01-03-05:003::,-999-UP;	Laser current, power and output	Fault Performance	System		Daily	Retrieves the current value of various points of measure for the WCM board.		✓
RTRV-PM:LEM_EM_M12-01-03-12:001::,-999-UP;	Power, current and limits.	Fault Performance	System		Daily	Retrieves the current value of various points of measure for the LEM board.		✓
RTRV-WRKP::SCF_W-01-03-17:001;	Fan, Current and Battery Levels	Fault	System		Daily	Retrieves the working point of various points of measure for the SCF board. If no working point value is returned, it means that it is currently set to zero or no working points exist for the board type.		✓
RTRV-PM:SCF_W-01-03-17:002::,-999-UP;	Fan, Current and Battery Levels	Fault	System		Daily	Retrieves the current value of various points of measure for the SCF board.		✓
RTRV-TH:SCF_W-01-03-17:003;	Fan, Current and Battery Limits	Fault	System		Daily	Retrieves threshold values of various points of measure for the SCF board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify current, DC converter and battery control values and thresholds. Check for associated alarm status messages. Fault isolate to the board level.	✓
RTRV-WRKP::IOC-01-01-16:001;	Analog input levels	Configuration	System		Daily	Retrieves the working point of various points of measure for the IOC board. If no working point value is returned, it means that it is currently set to zero.		✓
RTRV-PM:IOC-01-01-16:002,-999-UP;	Analog input levels	Configuration	System		Daily	Retrieves the current value of various points of measure for the IOC board.		✓
RTRV-TH:IO-01-01-16:003;	Analog input levels	Configuration	System		Daily	Retrieves threshold values of various points of measure for the IOC board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.		✓
RTRV-TH:LSM_W-01-01-13:001;	Laser power output	Fault Performance	System		Daily	Retrieves threshold values of various points of measure for the IOC board. Thresholds could include Degrade, Fail, High, Low Medium and High Medium.	Verify the analogic input and output values and thresholds. Check for associated alarm status messages. Fault isolate to the board level.	✓
RTRV-PM:LSM_W-01-01-13:002::,-999-UP;	Laser current, power and output.	Fault Performance	System		Daily	Retrieves the current value of various points of measure for the LSM board.		✓
RTRV-WRKP::LSM_W-01-01-13:003;	Laser temp and power limits	Fault Performance	System		Daily	Retrieves the working point of various points of measure for the LSM board. If no working point value is returned, it means that it is currently set to zero.		✓
RTRV-ALM:ALL:001;	Retrieves alarm status	Fault	System Media		Hourly	Retrieves the alarm or alarms associated with all board types of the specified network element.	Check alarms messages per network element and network wide. Look for common cause of multiple alarms. Verify the current values and threshold values for help in troubleshooting. Fault isolate to the board level.	✓

FIGURE 4B

# 500 TABLE OF EXEMPLARY COMMAND RESPONSES AND EXPLANATIONS

Net Audit (Version X)		
Command	RESPONSE	Net Advice
RTRV-CNFGRN::001;	SOFTLINE2 00-07-18 09:01:38 M 001 COMPLD "SOFTLINE2";	
RTRV-VER::CMP_W-01-01-15:002;	SOFTLINE2 00-07-18 09:01:38 M 001 COMPLD "SOFTLINE2"; "CMP" W-01-01-15:1.1.2-A,1.0.0,1.0.0,12345678	NETWORK ELEMENT NAME SOFTWARE VERSION
RTRV-IPADDR::CMP_W-01-01-15:003;	SOFTLINE2 00-07-18 09:43:44 M 003 COMPLD; "CMP" W-01-01-15:165.122.231.52,255.255.255.0,165.122.231.90	
RTRV-NETTYPE::004;		

## 510 EXAMPLE RESPONSE PARSING

Query: RTRV-NETTYPE:::004;

Response: "CISCO,ONS15800,TERMINAL SITE,NE-V1.5"

FIELD: 1D 2D 3D 4D 5D

Index Number	Field Name	OUTPUT
1A	Network Element Name	PIR_MA_CNFGRN
1D	Vendor Name	PIR_MA_NETYPE
2D	Network Element Model Number	PIR_MA_NETYPE
3D	Network Element Type	PIR_MA_NETYPE
4D	Keyword SITE	PIR_MA_NETYPE
5D	Network Element Version	PIR_MA_NETYPE

Query: RTRV-EQPT:SOFTLINE2:ALL:004;

Response: "PRE\_L -01-01-01: IS-NR"

Response: "RBA -01-01-02: IS-NR"

Response: "BBA -01-01-01: IS-NR"

Response: "PRE\_L -01-01-01: IS-NR"

Response: "RBA -01-01-01: IS-NR"

Response: "BBA -01-01-01: IS-NR"

Response: "EOI\_W -01-01-01: IS-NR"

Response: "LSM\_W -01-01-01: IS-NR"

Response: "CMP\_W -01-01-01: IS-NR"

Response: "IOC\_W -01-01-01: IS-NR"

Response: "SCF\_W -01-01-01: IS-NR"

FIELD: 1E 2E 3E 4E

Index Number	Field Name	OUTPUT
1A	Network Element Name	PIR_MA_CNFGRN
1E	Board Name	PIR_MA_EQPT
2E	Rack Position	PIR_MA_EQPT
3E	Sub-Rack Position	PIR_MA_EQPT
4E	Slot Position	PIR_MA_EQPT

## FIGURE 5

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## 600 Example DWDM Optical Network Audit Report OVERVIEW

Section	Name	Description
1	Executive Summary	High level summary of network defined as Network Health
2	Net Audit Detail	Values, exceptions and Net Rule Exception Points (NREPs) Identified and broken down by node.
3	Net Audit Task List	General and network specific advice and information for resolving issues uncovered in the audit.
Appendix A	General Module Info	Details of NREPs, values and exceptions are dealt with in detail.
Appendix B	Device Unreachable Info	Lists the devices not included in this audit.

## 610 Example DWDM Optical Network Audit NET AUDIT COLLECTION SUMMARY

Name	Result
Collection Period	7 Days
Collection Start Time	CollectionStart
Collection Stop Time	(date here)
***Unreachable Nodes	Unreachable

## 620 Example DWDM Optical Network Audit Net Audit NREP Summary

Name	Result
Critical NREPs:	(Number of Critical NREPs) \$Critical_NREP
Warning NREPs:	(Number of Warning NREPs) \$WarningI_NREP
Total NREPs:	(Total number NREPs) \$Total_NREP
Total Possible NREPs:	(Total Possible NREPs) \$Possible_NREP
Net Audit Health	((Total NREPs / Total Possible NREPs) x 100) \$Net_Health

Note: Ranking Formula: (Actual NREPs / Total NREPs) x Traffic Co-efficient

## 630 Audit Exception Detail Table

Fault Management		Performance Management		Capacity Planning Management		Configuration Management	
System		System		System		System	
Media		Media		Media		Media	
Protocol		Protocol		Protocol		Protocol	
Total NREPs		Total NREPs		Total NREPs		Total NREPs	

FIGURE 6

## 700 CONFIGURATION MANAGEMENT Example

### 710 Network Element Table

Network Element Name	TL1 Agent Software Version	IP Address	Uptime (Days)

### 720 Board Table

Network Element Name	Board Name	Board Position			Serial Number
		R (rack)	SR (subrack)	S (slot)	

FIGURE 7



## 800 MEDIA ANALYSIS Example

810 Pre-L Board Table (RESULT EXAMPLE)

Network Element Name	Board Name	Board Position			Laser 1			Input Power	Output Power		
		R	SR	S	Temp	Current	Power		Blue	Red	NA
SOFTWARE2	PRE_L	1	1	4	WP	25.000	80.430	-15.710	NA	NA	NA
					CV	25.000	146.330	DEG	DEG	DEG	10.884
					TH1	HGH	DEG	DEG	DEG	DEG	12.07
					TH2	28.000	176.000	23.497	1.492	FAIL	FAIL
					TH3	LOW	FAIL	FAIL	FAIL	FAIL	FAIL
					TH4	22.000	290.000	10.000	-29.508	-1.002	-13.01
						NA	LOW	NA	NA	NA	NA
						25.000					

820 8WD-B AND 24WD\_R (Demultiplexer) Board Table (RESULT EXAMPLE)

Network Element Name	Board Name	Board Position			Average Temperature
		R	SR	S	
EAST	8WD_B	1	1	7	WP
					CV
					TH1
					TH2
					TH3
					TH4
					78.020
					78.020
					HIGH 93.020
					HMD 81.020
					LMID 75.020
					LOW 63.030

830 RBA, BBA, TPA-R, TPA-B (Booster and Transmitter Amplifiers) Board Table (RESULTS EXAMPLE)

Network Element Name	Board Name	Board Position			Laser 1			Laser 2			Input Power	Output Power
		R	SR	S	Temp	Current	Power	Temp	Current	Power		
EAST	TPA_R	1	1	1	WP	25.000	NA	75.000	25.010	91.990	NA	NA
					CV	25.000	137.680	80.430	25.010	91.990	-13.160	12.812
					TH1	HGH	DEG	DEG	HGH	DEG	HIGH	HGH
					TH2	25.000	157.000	157.000	28.000	157.000	-5.003	12.761
					TH3	LOW	FAIL	FAIL	LOW	FAIL	DEG	DEG
					TH4	22.000	250.000	250.000	22.000	250.000	-28.013	9.196
						NA	LOW	NA	NA	LOW	FAIL	FAIL
						25.000			25.000		-30.507	6.990

FIGURE 8A

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840 LEM, RXT and WCM (Channel Board) Table

Network Element Name	Board Name	Board Position			CH NUM	Laser 1			Laser 2			Input Power		Output Power	
		R	SR	S		Temp	Current	Power	Temp	Current	Power	Inst. 1	Inst. 2	Inst. 1	Inst. 2
EAST	WCM	1	3	5	5	WP	25.400	NA	NA			NA		NA	
						CV	25.650	61.460	9.951						
						TH1	HIGH	DEG	HIGH			-3.131		0.083	
						TH2	27.390	72.650	12.000			HIGH		HIGH	
							LOW	FAIL	LOW			LOW		LOW	
							23.400	84.750	8.000			-19.208		-1.029	

850 ADA (ADD/DROP AMPLIFIER) BOARD TABLE

Network Element Name	Board Name	Board Position			Laser 1			Laser 2			Input Power		Output Power		
		R	SR	S	Temp	Current	Power	Temp	Current	Power	Inst. 1	Inst. 2	Inst. 1	Inst. 2	
OADM SITE	ADA	1	1	6	WP										
					CV										
					TH1	HIGH	LOW	DEG	HIGH	LOW	DEG		DEG	DEG	
					TH2	LOW	DEG	FAIL	LOW	DEG	FAIL		FAIL	FAIL	
					TH3	NA	FAIL	NA	NA	FAIL	NA		NA	NA	

860 OADM (Optical Add/Drop Multiplexer)

Network Element Name	Board Name	Board Position			Laser Temperature 1			Laser Temperature 2		
		R	SR	S	WP	CV	TH1	TH2	TH3	
OADM SITE	OADM-P4-B1	1	1	6	WP					
					CV					
					TH1	HIGH				
					TH2	LOW				
					TH3					

FIGURE 8B

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870 SCF Board Table

Network Element Name	Board Name	Board Position			Fan Current				DC Converter	Battery Control
		R	SR	S	Inst. 1	Inst. 2	Inst. 3	Inst. 4		
					WP					
					CV					
					TH1					
					TH2					
					TH3					

880 IOC Board Table

Network Element Name	Board Name	Board Position			Analogic Input/ Output							
		R	SR	S	1	2	3	4	5	6	7	8
					WP							
					CV							
					TH1							
					TH2							
					TH3							

890 LSM Board Table

Network Element Name	Board Name	Board Position			Laser East				Laser West				Output Power	
		R	SR	S	Temp	Current	Temp	Current	Temp	Current	Inst. 1	Inst. 2		
					WP									
					CV									
					TH1									
					TH2									
					TH3									

FIGURE 8C

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## 900 PERFORMANCE ANALYSIS EXAMPLE

### 910 B1 Monitoring Board Table

Network Element Name	Board Name	Board Position			Ch. Num.	Current				15 Minute				24 Hour			
		R	SR	S		ES	SES	BBE	UT	ES	SES	BBE	UT	ES	SES	BBE	UT

### 920 Alarm Status Table

Network Element Name	Board Name	Board Position			Alarm Status	NREPs
		R	SR	S		

## 1000 Capacity Planning Example

### 1010 Board Software Table

Board Name	Software Version	Network Element Name	Board Position		
			R	SR	S

FIGURE 8D

900

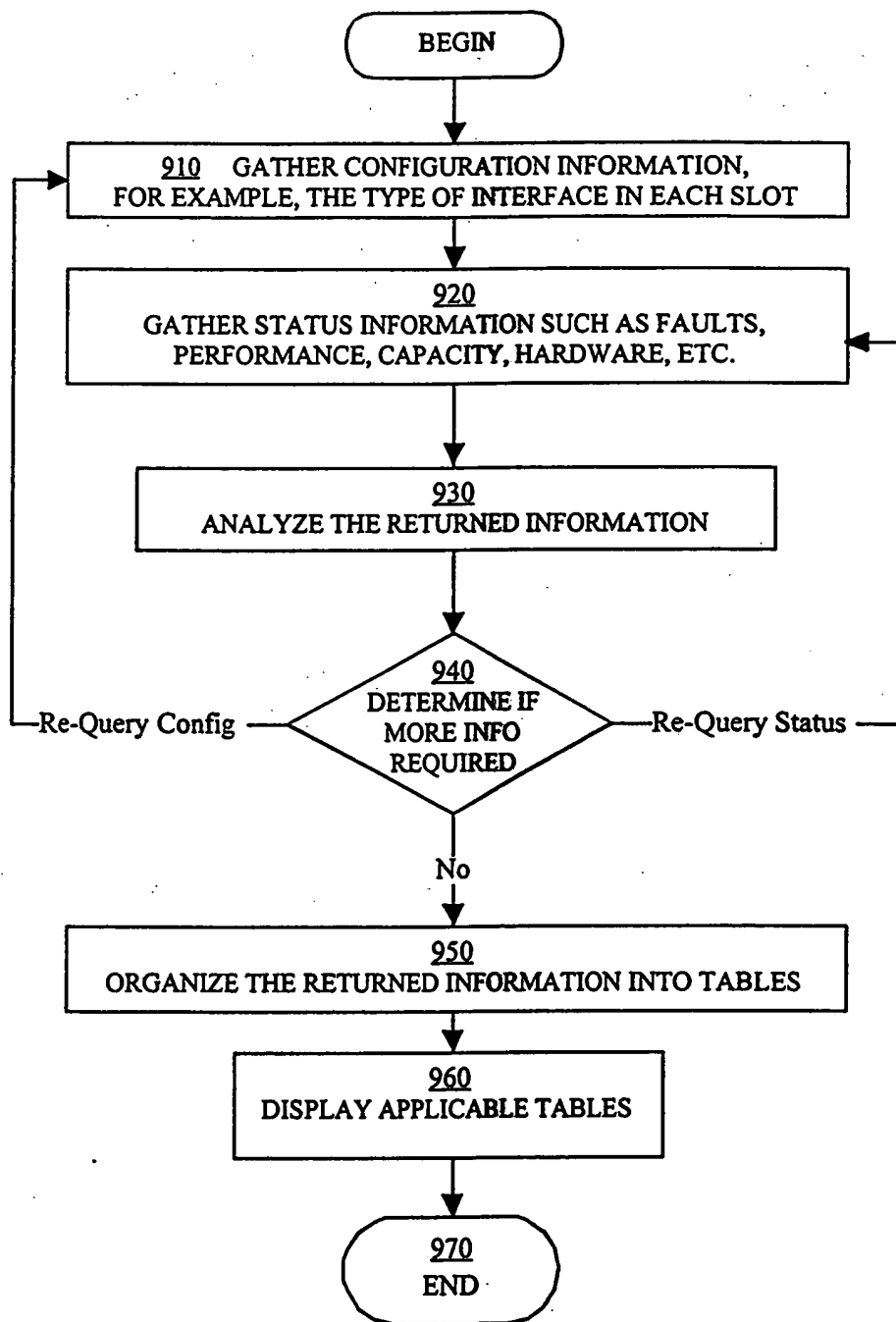


FIGURE 9